C A M B O D I A

HELEN KELLER INTERNATIONAL

Vol. 2, Issue 2
November 2000

NUTRITION BULLETIN

The need for increasing coverage of vitamin A capsule program to reduce vitamin A deficiency among young children in Cambodia

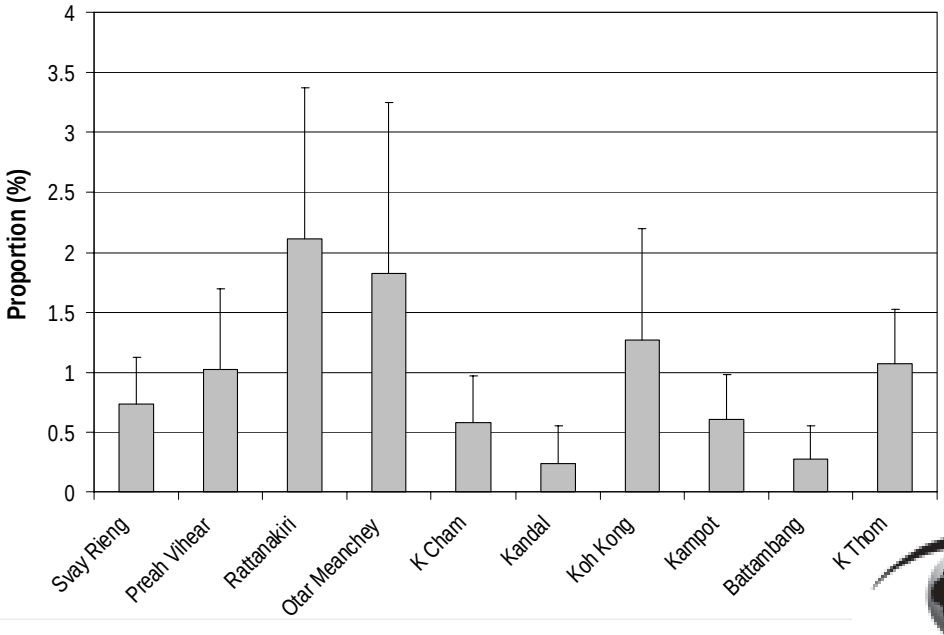
Since 1993, the Royal Government of Cambodia (RCG), in collaboration with UNICEF, WHO and Helen Keller International (HKI) have been actively involved in combating vitamin A deficiency through the distribution of vitamin A capsules (VAC). Results from the Cambodia National Micronutrient Survey (April – August 2000) reveal that night blindness is a problem of public health significance in many provinces and that VAC markedly reduce the risk of vitamin A deficiency and its consequences such as increased morbidity and mortality. Thus, VAC distribution must be continued nationwide and the current coverage of 10-55% needs to be increased.

Vitamin A deficiency

Vitamin A deficiency is a serious public health problem. It is associated with increased morbidity and mortality among preschool children and extensive evidence now shows that the survival chances of children aged 6 months to 5 years are increased by 20-25%[1] when vitamin A status is improved through twice yearly distribution of high-dose VAC. While night blindness is the first clinical sign of vitamin A deficiency, many more children, who do not yet show clinical signs of vitamin A deficiency, may already be at risk of increased morbidity and mortality in all provinces. The prevalence of night

(cont'd on p2, col. 2)

Figure 1. Prevalence of night blindness among children aged 18-59 months, by province (n=12,820). *Bars indicate 95% CI (Confidence Interval) corrected for design effect.*



The Cambodia Nutrition Bulletin is published by Helen Keller International – Cambodia

Helen Keller WORLDWIDE

Vitamin A

What vitamin A does[i]

Vitamin A stored normally in the liver, is crucial for effective immune-system functioning, protecting the integrity of epithelial cells lining the skin, the surface of the eyes, the inside of the mouth and the alimentary and respiratory tracts.

Signs and consequences of vitamin A deficiency

When the body's defense breaks down as a consequence of vitamin A deficiency (VAD), the person is more likely to develop infections, and the severity of an infection is likely to be greater. Also, in case of relatively severe deficiency, a range of abnormalities may appear in the eyes. In the mildest form, night blindness occurs. In more severe forms, lesions occur on the conjunctiva and cornea that if left untreated can cause irreversible damage, including partial or total blindness. Such lesions can be grouped together under the term xerophthalmia.

Night blindness

Night blindness, the first clinical sign of VAD, is a well recognized indicator of VAD. It was added to the classification of signs of VAD in 1980 when it was found that a mother or guardian's history of night blindness in a young child (from the age of 18-24 months), particularly one employing a locally recognized term, was highly reliable.[ii, iii] Field workers with adequate training can reliably identify a history of night blindness, especially when using local terms.

The World Health Organization (WHO) and IVACG have established that if night blindness prevalence among young children (18-59 or 24-59 months) in a community is greater than or equal to 1%, VAD constitutes a ìproblem of public health significanceî within that community[iv, v] . And, a larger proportion of that community is thus likely to suffer other consequences of vitamin A deficiency such as increased morbidity and mortality.

[i] Partly reprinted from *The State Of The World's Children 1998*, UNICEF, Oxford University Press, 1998, p76

[ii] Sommer A, West K. Vitamin A Deficiency: health Survival and Vision. New York: Oxford University Press, 1996.

[iii] Sommer A, Hussaini G, Muhilal, Tarwotjo I, Susanto J, Saroso JS. History of night blindness: A simple tool for xerophthalmia screening. Am J. Clin Nutr 1980;33:887-891.

[iv] Control of vitamin A deficiency and xerophthalmia. Report of a joint WHO/UNICEF/USAID/Helen Keller International IVACG Meeting. WHO Technical Report Series 672. Geneva: World Health Organization 1982:1-70.

[v] Sommer A. Vitamin A Deficiency and Its Consequences: A Field Guide to Detection and Control. Third Edition. Geneva: World Health Organization 1994.

(cont'd from p1)

blindness is thus an indicator of whether vitamin A deficiency is a problem at community level. WHO and the International Vitamin A Consultative Group (IVACG) have established a cut-off for the prevalence of night blindness of 1%, which indicates that vitamin A deficiency is a public health problem.

Prevalence of night blindness

Results from the first national micronutrient survey of rural Cambodia show that vitamin A deficiency is still a problem of public health significance in at least five of the 10 provinces surveyed. **Figure 1** (p1) shows the prevalence of night blindness among children aged 18-59 months by province. Night blindness prevalence varies by province and in Preah Vihear, Rattanakiri, Otar Meanchey, Koh Kong and Kampong Thom it is above the cut-off indicating a public health problem. For the other provinces, where the overall prevalence is below the cut-off of 1%, the prevalence may still be above 1% in particular communes of the province, at other times of the year, or under less favorable agricultural or financial conditions. This particularly applies to Svay Rieng, Kampong Cham and Kampot. In fact, the survey was conducted shortly after the mango season, which may have caused a slight, seasonal, improvement of vitamin A status and therefore reduced the prevalence of night blindness.

VAC coverage

One strategy for combating vitamin A deficiency among children 6 – 59 months of age is to provide them with a high-dose vitamin A capsule twice a year. The RCG initiated a VAC distribution program in 1994. Initially, VAC were distributed through the National Immunization Days (NIDS) for polio. Since 1998, when the NIDS for polio were over, VAC have been distributed twice yearly during routine immunization outreach activities and through sub-NIDS[2] .

Figure 2 shows the coverage of VAC during the March 2000 distribution, by province and child age group. Six years after the distribution of the first VAC and two years after a change of delivery strategy which

Figure 2. Vitamin A capsule coverage in March 2000, by province and child age group (n=16,121). *Bars indicate 95% CI (Confidence Interval) corrected for design effect.*

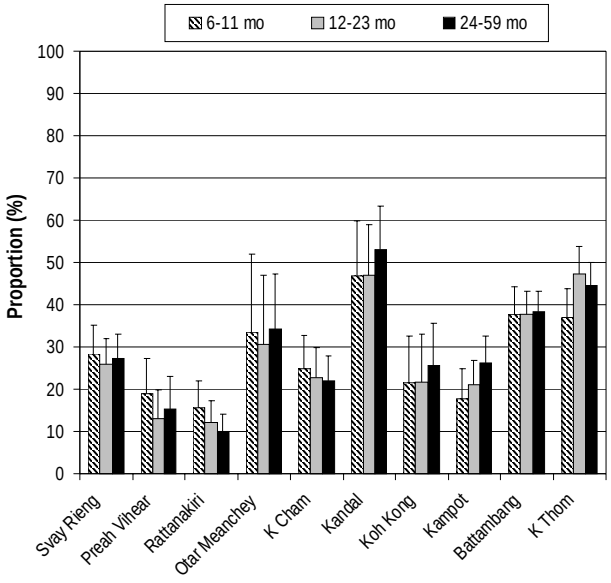
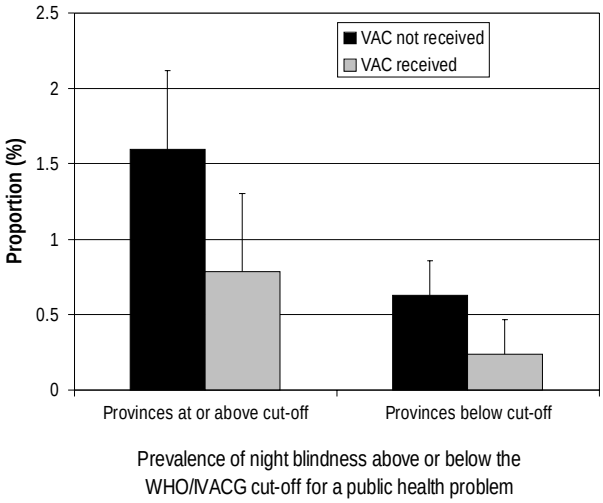


Figure 3. Prevalence of night blindness among children aged 6-59 months in provinces with night blindness prevalence greater or equal, or below the cut-off of 1% and by whether they received a VAC. *Bars indicate 95% CI (Confidence Interval) corrected for design effect.*



presented the RCG with a difficult challenge, nationwide coverage varied from approximately 10% to 55%. Given the circumstances, this level of coverage is a good achievement and it is likely that this has reduced the prevalence and severity of VAD in the country over the past years. Figure 2 also shows that coverage was very similar among the different age groups. More detailed analysis however also showed that at commune level, VAC coverage could be as low as 5% but also as high as 80%. The next *Cambodia Nutrition Bulletin* will assess VAC distribution in more detail, including its relationship with the immunization outreach activities.

Importance of VAC

The protection against night blindness provided by the VAC is shown in **Figure 3**. Both among the provinces where the prevalence of night blindness was equal to or greater than the cut-off of 1% as well as among the provinces where the prevalence of night blindness was below this cut-off, children that had received a VAC had a 2.2 - 2.3 times lower risk to be night blind[3] than those who had not received a VAC. This shows that VAC are protective against vitamin A deficiency, also in the provinces where the prevalence of night blindness was below the cut-off of 1%.

Thus, in order to reduce the risk of morbidity and mortality associated with vitamin A deficiency, and of clinical signs of vitamin A deficiency, VAC distribution should be continued nationwide, irrespective of the observed prevalence of VAD.

Conclusions

- **Vitamin A deficiency is still a problem of public health significance among Cambodian children in many provinces.**
- Vitamin A capsule coverage ranged from 10-55% and varied widely among and within provinces.
- Vitamin A capsules reduced a child's risk for night blindness more than two times in all provinces, irrespective of the prevalence of night blindness in the particular province.

Recommendations

- The distribution of high dose vitamin A capsules among Cambodian children aged 6-59 months should be continued nationwide.
- Factors associated with VAC coverage should be determined in order to try to improve coverage.
- Meetings should be held with health staff at the provincial- operational district- and health center-levels to share survey findings and discuss ways in which VAC coverage could be improved.

Endnotes

[1] Reference: Beaton GH, Martorell R, L'Abbe KA, Edmonston B, McCabe G, Ross AC, Harvey B. *Effectiveness of vitamin A supplementation in the control of young child morbidity and mortality in developing countries.* ACC/SCN Nutrition Policy Paper. Geneva: United Nations Administrative Committee on Coordination/Sub-Committee on Nutrition, 1993.

[2] More details on the history of the VA program can be found in the *HKI/Cambodia Nutrition Bulletin* Vol. 1, Issue 2, January 2000.

[3] Logistic regression analysis controlling for other factors such as age, socio-economic status, remoteness of the commune, breastfeeding status, dietary vitamin A intake and morbidity.

C A M B O D I A

Helen Keller International Nutrition Bulletin

For information and correspondence, contact:

Helen Keller International, Cambodia
P.O. Box 168, Phnom Penh
Kingdom of Cambodia
Telephone: 855-23-210851
Fax: 855-23-210852

Ms. Dora Panagides, Country Director
E-mail: hki@bigpond.com.kh

Ms. La-Ong Tokmoh, IEC Advisor
E-mail: ong@bigpond.com.kh

Helen Keller International, Regional Office
P.O. Box 4338, Jakarta Pusat
Indonesia
Telephone: 62-21-7198147/7199163
Fax: 62-21-7198148

Dr. Martin W. Bloem, Regional Director
E-mail: mwbloem@compuserve.com

Dr. Regina Moench Pfanner, Regional Coordinator
E-mail: remoench@cbn.net.id

Dr. Saskia de Pee, Regional Nutrition Research Advisor
E-mail: sdepee@compuserve.com

Ms. Lynnda Kiess, Regional Advisor
E-mail: lkiess@bdonline.com

Helen Keller WORLDWIDE

Helen Keller International
a division of
Helen Keller Worldwide

The Cambodia National Micronutrient Survey was made possible through funding from the United States Agency for International Development (USAID) under the terms of Cooperative Agreement No. HRN-A-00-98-00013-00.

This publication was made possible through support by the USAID/Cambodia Mission under the terms of Award No. 442-G-00-95-00515-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of USAID.